ROTARY SEAL FOR CLOUSURE WITH ON-STOP

BACKGROUND OF THE INVENTION

Technical Field of the Invention

The present invention relates generally to a threaded closure-container package. More particularly, the invention relates to a threaded closure-container package having a rotary seal, an on-direction stop mechanism, and a child resistance feature. Additionally, the closure-container package may have a tamper-indicating feature.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a threaded closure-container package.

It is a further objective of this invention to provide a threaded closure-container package having a rotary seal between the closure and the container.

It is still a further objective of this invention to provide a threaded closure-container package having a rotary seal between the closure and the container and an on-direction stop mechanism.

An even further object of the present invention is to provide a threaded closure-container package having a rotary seal between the closure and the container, an on-direction stop mechanism, and further comprising a child resistance feature.

An even further objective of the present invention is to provide a threaded closure-container package having a rotary seal between the closure and the container, an on-direction stop mechanism, a child resistance feature, and further comprising a tamper indicating band.

Specifically, a threaded closure-container package is provided which includes a container having a shoulder and a neck extending upward from the shoulder and having an external thread extending helically about the neck, a closure having a top wall and skirt depending from a peripheral edge of the skirt, the skirt having an internal thread mating the external thread of the container neck, the closure having a rotary seal depending from the top wall, the closure and container each having at least one on-direction stop mechanisms being operably engaged, the closure and container package having a child resistance feature, and, the closure having a tamper indicating band with ratchets on an interior surface engaging ratchets on the container neck.

All of the above outlined objectives are to be understood as exemplary only and many more objectives of the invention may be gleaned from the disclosure herein. Therefore, no limiting interpretation of the objectives noted is to be understood without further reading of the entire specification, claims, and drawings included herewith.

BRIEF DESCRIPTION OF THE DRAWINGS

The aspects and advantages of the present invention will be better understood when the detailed description of the preferred embodiment is taken in conjunction with the accompanying drawings, in which:

FIG. **1** shows a perspective view of the closure-container package of the present invention;

FIG. **2** shows a reverse taper plug rotary seal of the closure-container package of the present invention;

FIG. **3** shows an alternative embodiment of a rotary seal of the closure-container package of the instant invention;

FIG. **4** shows an external on-direction stop mechanism of the closure-container package of the instant invention;

FIG. **5** shows a lower rib on-direction stop mechanism of the closure-container package of the instant invention;

FIG. **6** shows an upper rib on-direction stop mechanism of the closure-container package of the instant invention;

FIG. **7** shows a blunt end cap thread on-direction stop mechanism of the closure-container package of the instant invention;

FIG. **8** shows a first child resistance feature of the closure-container package of the instant invention;

FIG. **9** shows an alternative embodiment of a child resistance feature of the closure-container package of the instant invention;

FIG. **10** shows a tamper indicating band of the closure-container package of the instant invention and,

FIG. **11** shows a plurality of ratchets of the tamper indicating band engaging a plurality of ratchets of the container neck.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention will now be described in conjunction with the drawings, referring initially to FIGS. **1** & **2**, a threaded closure-container package **50** is shown. The threaded closure-container package **50** has a plurality of features which improve its functionality. The threaded closure-container package **50** generally comprises a closure **10** having a top wall **12** and a skirt **18** depending from a peripheral edge of the top wall **12**. The skirt **18** has an upper portion **18***a* and a lower portion **18***b* as shown in FIG. **1**. Extending from an inner surface of skirt **18** is an internal thread **16**. The internal thread **16** mates with an external thread **26** of an upper portion or neck of container **14** as the closure **10** is preferably, screwed on to the container neck **15**. As shown in FIGS. **2** & **3**, the threaded closure-container package **50** preferably has a rotary seal **24** or **32** inhibiting leakage, spillage, and the like. The threaded closure-container package **50** also comprises an "on-direction" stop mechanism **200** generally shown in FIG. **4**. The on-direction stop mechanism **200** inhibits overtorquing of threads **16**,**26** and resultant thread stripping. The on-direction stop mechanism **200** also inhibits overtightening of the closure **10** on a container neck **15** which may lead to seal damage and subsequent leakage. In addition, a child resistant feature **300** is also provided with the closure-container package **50** and is generally shown in FIG. **8**. The child resistant package **300** inhibits one of tender years from obtaining the contents of container **14** and accidentally ingesting the drugs or chemicals retained therein. Finally, a tamper indicating band **400** may also be included in the closure-container package **50**. The various embodiments of the closure-container package **50** will be described below.

Rotary Seal

Referring now to FIGS. **2** & **3** various embodiments of a rotary seal are shown, respectively. A reverse taper plug closure top seal **24** is shown in FIG. **2** further comprising a closure **10** and a container **14**. The closure **10** has a top wall **12**, preferably circular, but which may be of any desired shape. Depending from an outer peripheral edge of top wall **12** is a skirt **18**. Extending inwardly from an inner surface of skirt **18** is an internal thread **16** which mates with external thread **26** of container **14**.

Container **14** has a neck or upper portion **15** and an external thread **26** extending therefrom which rotatably engages the internal thread **16**. As seen in FIG. **1**, beneath the